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**СБОРНИК ТЕЗИСОВ ІІІ МЕЖДУНАРОДНОЙ НАУЧНО-ПРАКТИЧЕСКОЙ КОНФЕ-
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EFFECTS OF MELATONIN ON THE INTENSITY OF LIPID PEROXIDATION AND OXIDATIVE MODIFICATION OF PROTEINS IN MUSCLE TISSUE OF DIABETIC RATS

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The pathological process takes place on the background of the formation of reactive oxygen species and biological substrates intensification of free radical oxidation that leads to oxidative stress. It is believed that hyperglycemia by diabetes mellitus is characterized by increased generation of free radicals, which can lead to destructive oxidation of lipids and proteins biomembranes. The goal of our research was study the effect of melatonin on the intensity of lipid peroxidation, oxidative modification of proteins mitochondrial fraction of muscle of rats with alloxan diabetes mellitus.

The experiment was carried out on male albino rats with the body weight – 0.16 – 0.18 kg. Experimental diabetes was induced by 5% alloxan monohydrate solution in the dose of 150 mg/kg. After diabetes was confirmed, rats were divided into groups as follows: 1) control rats; 2) alloxan diabetic rats; 3) animals with overt diabetes, which were introduced the melatonin intragastral in the dose of 10 mg/kg at 8 a.m. during 7 and 14 days.

It is shown that the diabetes in the mitochondrial fraction of rat skeletal muscle increases the intensity of free radical processes, as evidenced by the increase of tiobarbiturat-active products in 1.4 times and 1.6 times on 7 and 14 days of the experiment compared to the control group of animals. The results of research intensity peroxide damage mitochondrial proteins of muscle tissue showed an increase of carbonyl-content derived against the background of enhanced oxidative modification of SH-groups. Thus, the level of oxidative modification of mitochondrial proteins in muscle tissue, insoluble in 0.05 M Na-phosphate buffer 14 day study was 1.3 times higher control. While the intensity of the oxidation of SH-groups increased 1.5 times under the control of the background of an increase in the intensity of accumulation derivativ carbonyl-amino acids. Such changes lead to an imbalance between sulfhydryl and disulfide groups by inhibiting protein SH-groups and the formation of -S-S-groups that are non-specific reaction of organism.

Study of influence of melatonin showed that 7-day introduction of melatonin reduces the content tiobarbiturat-active products, reducing the level of protein carbonylation control and approach control values to the number of free sulfhydryl groups of proteins on 14 day of the experiment. The positive effect of melatonin on free radical oxidation of lipids and proteins mitochondria of muscle tissue in rats with diabetes confirms its anti-oxidant properties. The intensification of free radical processes in the mitochondrial fraction is accompanied by increased content tiobarbiturat-active products and oxidation of mitochondrial proteins. These changes can be seen as a compensatory reaction to oxidation stress caused by hyperglycemia. Introduction of melatonin showed a positive effect on the studied processes of free radical oxidation of lipids and proteins of mitochondrial fraction of muscle of rats on the background of hyperglycemia.